

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OKLAHOMA**

STATE OF OKLAHOMA, ex rel,
W. A. DREW EDMONDSON,
in his capacity as ATTORNEY GENERAL
OF THE STATE OF OKLAHOMA,
and OKLAHOMA SECRETARY
OF THE ENVIRONMENT
C. MILES TOLBERT, in his capacity as
the TRUSTEE FOR NATURAL RESOURCES
FOR THE STATE OF OKLAHOMA,

Plaintiff,

V.

TYSON FOODS,
TYSON POULTRY, INC., TYSON CHICKEN, INC.,
COBB-VANTRESS, INC., AVIAGEN, INC.,
CAL-MAINE FOODS, INC.,
CAL-MAINE FARMS, INC., CARGILL, INC.,
CARGILL TURKEY PRODUCTS, LLC,
GEORGE'S, INC., GEORGE'S FARMS, INC.,
PETERSON FARMS, INC., SIMMONS FOODS,
INC. AND WILLOWBROOK FOODS, INC.

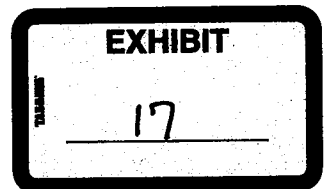
Defendants.

CASE NO. 05-CV-329-GKF- SAJ

AFFIDAVIT OF DR. ROBERT S. LAWRENCE

The undersigned, Robert S. Lawrence, does solemnly swear and state:

1. My name is Dr. Robert S. Lawrence. I graduated from Harvard College with a Bachelor of Arts degree in History, magna cum laude, while completing my premedical course requirements in chemistry, physics, biology, and mathematics. I received my M.D. from Harvard Medical School in 1964 and completed my training in internal medicine at the Massachusetts General Hospital. I am certified by the American Board of Internal Medicine and am a Master in the American



College of Physicians and a Fellow in the American College of Preventive Medicine. I served for three years as an Assistant Surgeon in the Commissioned Corps of the US Public Health Service as an Epidemic Intelligence Service officer at the Centers for Disease Control and Prevention. In 1978 I was elected to the Institute of Medicine of the National Academy of Science.

2. From 1970 to 1974 I was a member of the faculty of the University of North Carolina School of Medicine where I headed the Community Medicine Division in the Department of Medicine and in the Department of Family Medicine. From 1974 to 1991 I was on the faculty of the Harvard Medical School and director of the Harvard Primary Care Division. From 1980 to 1991 I also served as Chief of Medicine at the Cambridge Hospital and as the Charles Davidson Associate Professor of Medicine. From 1984 to 1989 I served as the first chair of the U.S. Preventive Services Task Force of the Office of Disease Prevention and Health Promotion of the Department of Health and Human Services. In 1991 I was recruited to serve as Director of Health Sciences at the Rockefeller Foundation where I was responsible for overseeing health projects in Asia, Africa, and Latin America. In 1995 I was appointed Associate Dean for Professional Programs and Practice and Professor of Health Policy and Management at the Johns Hopkins Bloomberg School of Public Health and served in that capacity until June 2006. Since then I have devoted my time as Professor of Environmental Health Sciences and Director of the Center for a Livable Future.
3. As founder and Director of the Center for a Livable Future at Johns Hopkins University I have since 1996 focused my academic work on the problems of food

systems, food security, and the threats to the environment and to public health posed by industrialized food animal production. The Center conducts, supervises and funds research on such topics as the emergence of antibiotic resistant bacteria as a consequence of the use of non-therapeutic antibiotics and other antimicrobials in animal feed and/or water supplies for growth promotion, the contamination of air and water by bacteria, protozoan parasites, viruses, organic wastes such as ammonia and other nitrogen compounds, and the adverse effects of excess nutrients such as nitrogen and phosphorus from wastes produced by animals raised in confinement operations. I have co-authored policy papers describing the harmful effects of the industrialization of agriculture and concentrated animal feeding operations (CAFOs) on the ecosystem, the safety and quality of the food supply, and the degradation of air, water, and soils by excess concentrations of animal waste from poultry, swine, beef cattle, and dairy CAFOs. I have testified before the Congress of the United States on these subjects and have participated in briefings for Congressional staff on the relationships among industrial agriculture, environmental degradation, and risks to public health.

4. I have chaired committees of the Institute of Medicine of the National Academy of Science that were commissioned to evaluate methods to reduce dioxin and dioxin-like compounds in the U.S. food supply, to assess the public health significance of radioactive Iodine from atmospheric nuclear tests in Nevada from 1950-1962, to establish vaccine priorities for the 21st century, and several other topics. I currently teach a course for masters and doctoral students in public health

on food systems, human nutrition, and the environment and a course about public health problem solving required of our Master of Public Health (MPH) students. My academic responsibilities include advising students in our MPH, Ph.D., and Doctor of Public Health programs. The Center for a Livable Future currently supports eight pre-doctoral fellows, all of whom are investigating different aspects of the food system and its relationship to the environment.

5. I was the editor of the American Journal of Preventive Medicine for four years and currently review articles submitted for publication to that journal, as well as to the American Journal of Public Health, the Journal of the American Medical Association, the Lancet, the New England Journal of Medicine, the Milbank Quarterly, and several other scientific journals. I am the author of over one hundred scientific papers, book chapters, editorials and reviews; and the co-editor of six books related to preventive medicine, the environment, or food systems.
6. I have been retained by the Oklahoma Attorney General to evaluate the public health problems associated with the application on agricultural lands of poultry waste in the Illinois River Watershed.
7. I have reviewed a number of documents in preparation of my opinions in this case, including but not limited to the Affidavits prepared by Dr. Christopher M. Teaf, Dr. Valerie J. Harwood, Dr. Lowell Caneday, Dr. Roger Olsen and Dr. J. Berton Fisher. I have also considered peer-reviewed scientific articles related to CAFO and other agricultural waste, bacterial and other microbiologic contamination of surface waters, river systems, and shallow wells, including papers that focused on the mantled karst terrain of northwest Arkansas. I have

reviewed guidelines for monitoring bathing water and closure protocols prepared by state departments of public health and departments of environmental protection. Finally, I have reviewed data obtained from numerous samples of surface water, ground water, sediments, and soils collected in the Illinois River Watershed.

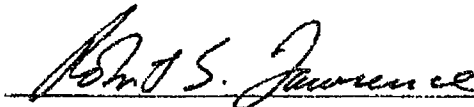
8. As described in the material I have reviewed, it is clear that the excess land application of poultry waste on agricultural land within the Illinois River Watershed has created a real and present threat to the health of the public among Oklahoma citizens using the Illinois River and its surrounding streams for recreation purposes. It also creates threats to Oklahoma citizens relying on over 1700 shallow wells for drinking water in the Illinois River Watershed. The mantled karst geology of the Watershed creates a fragile environment in which pathogens and excess nutrients such as nitrogen and phosphorus from animal waste quickly and readily enter the surface waters of the Illinois River Watershed, drain into the tributaries of the Illinois River, contaminate the aquifer from which shallow wells draw water for household use, and ultimately contaminate Lake Tenkiller downstream. The introduction in the Illinois River Watershed of industrial food animal production techniques with high concentration of animals within confinement structures, such as the typical poultry house containing 24,000 to 30,000 animals, has produced large amounts of poultry waste requiring disposal. Economic factors have created incentives for the vertically integrated poultry producers to seek methods of land application that minimizes transportation costs out of the fragile ecosystem areas where the poultry houses

are located. Thus, the over application of poultry waste has produced excess runoff of bacteria and other microorganisms exceeding the ability of the ecosystem to absorb, decontaminate, reuse, or breakdown the polluting effects of poultry waste.

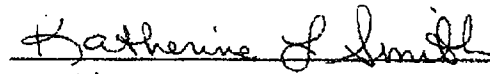
9. The material I have reviewed indicates that on a regular basis bacterial contamination of the Illinois River, its watershed, and shallow wells within the watershed exceeds levels considered a threat to public health. Recreational use of the Illinois River by tens of thousands of people each year places them at an unacceptable risk for exposure to pathogens arising from the poultry waste, including but not limited to *E. coli*, *Salmonella* species and *Campylobacter* species, all known causes of serious human disease. Furthermore, the non-therapeutic use of antimicrobials in poultry feed and water leads to the development of antimicrobial resistant bacteria and contributes to the growing problem of serious infections in the human population caused by antimicrobial resistant bacteria. The potential for significant contamination of well water among the population using the more than 1700 shallow wells places an additional group of Oklahoma residents at unacceptable risk of developing infections from bacterial pollutants derived from the land application of poultry waste.
10. The only effective way of protecting the health of the public from harm caused by the microorganisms in poultry waste is to limit severely the land application of the poultry waste in the Illinois River Watershed. Given the amount of contamination already present, I believe that a prudent public health intervention would be to institute a moratorium on the land application of poultry waste until effective

monitoring, surveillance, and absorptive capacity calculations can be developed to assure that the watershed is fully protected. Given the nature of the mantled karst geology of the Illinois River Watershed it may well be impossible to achieve adequate levels of protection to justify the continued use of any land application of poultry waste in this watershed.

FURTHER AFFIANT SAYETH NOT.


Robert S. Lawrence, MD

Subscribed and sworn to me by Robert S. Lawrence, MD, on the 13 day of November, 2007.

Signature 
Printed Name KATHERINE L. SMITH

Notary Public, State of Missouri

My commission expires: 5/1/2011

KATHERINE L. SMITH
Notary Public - Notary Seal
State of Missouri
Commissioned for Jackson County
My Commission Expires: May 01, 2011
Commission Number: 07392966